

5

Remarks

Claims 18 and 21 stand rejected under 35 USC 112 second paragraph for being indefinite in response to which those claims have been cancelled.

Claims 12 through 26 stand rejected under 35 USC 103(a) as being unpatentable over EP '249 in combination with US '491.

In response to this latter rejection under 35 USC 103, the Applicant has amended claim 12 to specify that the weather resistant paintable powder coating covers the vibration membrane. The Applicant believes that amended claim 12 is distinguished from the prior art for the following reasons.

US '491 discloses a large number of different chemicals which are UV absorbing and are suitable for various applications. The extensive disclosure of the '491 reference cites a wide plurality of compositions and possible applications and includes automotive coatings (see for example the table in paragraph [0344]). The '491 reference mentions that the coatings could be in powder form and are suitable for use as an automobile paint (see for example paragraphs [0397] to [0401] of the '491 reference). However, the '491 reference is completely silent as to the effects such a powder coating may have on the vibration properties of a sensor as claimed in claim 12.

The EP '249 reference concerns a waterproof transducer for a half wave length array. Such arrays have a plurality of sensors which are separated from each other by one half of the wave length of the ultrasonic device. Therefore, for a given ultrasound frequency, the spacing between adjacent sensors is fixed and cannot be changed. The '249 reference discloses a method in which the acoustical decoupling between neighboring sensors can be improved while simultaneously producing a

6

sensor which is more robust. The '249 reference achieves these purposes by analyzing the physical relationship between the size of the vibrating membrane and the associated acoustical coupling between adjacent sensors. The '249 reference discloses a plurality of equations showing the mathematical dependencies between the thickness of the walls between neighboring sensors as well as the thickness of the vibration sensor itself. In particular, equation two in paragraph [0013] of the '249 reference shows that increased thickness of the vibrating membrane requires an increased area for that membrane if the vibration frequency is to remain constant. However, the area of the membrane is also related to the optimal thickness of the walls between adjacent sensors and is therefore coupled to the central purpose of the invention (see for example equation 5). Moreover, the '249 reference provides no indication whatsoever as to the possible effects of a powder coating on the vibrational properties of the vibrating membrane.

One of average skill in the art, aware of the EP '249 and US '491 references is not motivated to combine those references and thereby provide for a powder coating covering the vibrating membrane, since there is no indication in either of those references that the desired vibration properties of the membrane can be maintained within the stated goals of the EP '249 reference if the membrane is coated with a powder coating. On the contrary, it would clearly appear that a powder coating deposited on the vibrating membrane would substantially change the vibration characteristics of the EP '249 reference. It is not clear whether or not the stated goals of the EP '249 reference can be maintained despite the application of the powder coating to the vibration membrane and there is no suggestion or teaching in either of the references that these stated goals could be maintained in the event that the vibrating membrane were coated in the manner claimed.

In accordance with the invention, it has been discovered that a paintable powder coating can be applied directly to the vibration membrane without negatively effecting the vibration properties of that membrane to such an extent that it can no longer function properly as a sensor. None of the prior art suggests that such an application coating would not negatively influence the vibrational properties of the membrane and therefore provides no motivation for the limitations recited in independent claim 12. The dependent claims of record inherit the limitations of claim 12 and are therefore similarly distinguished from prior art for the reasons given. The Applicant therefore respectfully requests reconsideration on the part of the Examiner in view of these amendments and passage to issuance.

No new matter has been added in this amendment.

8

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